

5016 US Saxena 17 Jul 2003  
SEQUENCE LISTING

<110> Saxena, Shailendra K.

<120> RIBONUCLEASES AND METHODS OF MAKING THEM

<130> 5016 US

<160> 74

<170> PatentIn version 3.1

<210> 1

<211> 114

<212> PRT

<213> Artificial

<220>

<223> Recombinantly produced 2325p4 protein occurring naturally in rana pipiens eggs and embryos.

<400> 1

Lys Pro Lys Glu Asp Arg Glu Trp Glu Lys Phe Lys Thr Lys His Ile  
1 5 10 15

Thr Ser Gln Ser Val Ala Asp Phe Asn Cys Asn Arg Thr Met Asn Asp  
20 25 30

Pro Ala Tyr Thr Pro Asp Gly Gln Cys Lys Pro Ile Asn Thr Phe Ile  
35 40 45

His Ser Thr Thr Gly Pro Val Lys Glu Ile Cys Arg Arg Ala Thr Gly  
50 55 60

Arg Val Asn Lys Ser Ser Thr Gln Gln Phe Thr Leu Thr Thr Cys Lys  
65 70 75 80

Asn Pro Ile Arg Cys Lys Tyr Ser Gln Ser Asn Thr Thr Asn Phe Ile  
85 90 95

Cys Ile Thr Cys Arg Asp Asn Tyr Pro Val His Phe Val Lys Thr Gly  
100 105 110

Lys Cys

<210> 2

<211> 342

<212> DNA

<213> Artificial

<220>

<223> 2325p4 DNA occurring naturally in rana pipiens eggs and embryos.

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aaaccgaaag aagaccgtga atgggaaaaa ttcaaaacta aacatatcac ttctcagtct 60  
gttgctgact tcaactgcaa ccgtactatg aacgacccgg cttacactcc ggacgggtcag 120  
tgcaaaccga tcaacacttt catccattct actactggtc cggttaaaga aatctgccgt 180  
cgtgctactg gtcgtgttaa caaatcttct actcagcagt tcaactctgac tacttgcaaa 240  
aaccgatcc gttgcaaata ctctcagtct aacactacta acttcatctg catcacttgc 300  
cgtgacaact acccggttca tttcgttaaa actggtaa at gc 342

<210> 3  
<211> 56  
<212> DNA  
<213> Artificial

<220>  
<223> SEQ ID NO:3 Contains XbaI restriction site.

<400> 3  
taattttgtt taactttaag aaggagatat accatgaaac cgaaagaaga ccgtga 56

<210> 4  
<211> 63  
<212> DNA  
<213> Artificial

<220>  
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ttccattca cggctttctt tcggtttcat ggtatatctc cttcttaaag ttaaacaaaa 60  
tta 63

<210> 5  
<211> 57  
<212> DNA  
<213> Artificial

<220>  
<223> SEQ ID NO:5

<400> 5  
atgggaaaaa ttcaaaacta aacatatcac ttctcagtct gttgctgact tcaactg 57

<210> 6  
<211> 57  
<212> DNA  
<213> Artificial

<220>  
<223> SEQ ID NO:6 Complementary to SEQ ID NO:5

<400> 6  
acggttgcag ttgaagtcag caacagactg agaagtgata tgtttagttt tgaattt 57

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<213> Artificial

<220>
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<210> 8
<211> 60
<212> DNA
<213> Artificial

<220>
<223> SEQ ID NO:8 Complementary to SEQ ID NO:7

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gatgaaagtg ttgatcgggt tgcactgacc gtccggagtg taagccgggt cgttcatagt      60


<210> 9
<211> 52
<212> DNA
<213> Artificial

<220>
<223> SEQ ID NO:9

<400> 9
tttcatccat tctactactg gtccgggttaa agaaatctgc cgtcgtgcta ct          52


<210> 10
<211> 52
<212> DNA
<213> Artificial

<220>
<223> SEQ ID NO:10 Complementary to SEQ ID NO:9

<400> 10
cacgaccagt agcacgacgg cagatttctt taaccggacc agtagtagaa tg          52


<210> 11
<211> 54
<212> DNA
<213> Artificial

<220>
<223> SEQ ID NO:11

<400> 11
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<210> 12
<211> 54

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<212> DNA  
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 <210> 13  
 <211> 57  
 <212> DNA  
 <213> Artificial  
  
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 <223> SEQ ID NO:13  
  
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 <211> 57  
 <212> DNA  
 <213> Artificial  
  
 <220>  
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 <400> 14  
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 <210> 15  
 <211> 60  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> SEQ ID NO:15  
  
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 <210> 16  
 <211> 53  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> SEQ ID NO:16 Complementary to SEQ ID NO:15  
  
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 ccgcgcggat ccctactagc atttaccagt tttaacgaaa tgaaccgggt agt 53  
  
 <210> 17  
 <211> 114  
 <212> PRT  
 <213> Artificial

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<220>

<223> Recombinantly produced 2325p6 protein occurring naturally in rana pipiens eggs and embryos.

<400> 17

Lys Pro Lys Glu Asp Lys Glu Trp Glu Lys Phe Lys Val Lys His Ile  
1 5 10 15

Thr Ser Gln Ser Val Ala Asp Phe Asn Cys Thr Ser Thr Met Asn Asn  
20 25 30

Pro Asp Phe Thr Pro Asp Gly Gln Cys Lys Pro Ile Asn Thr Phe Ile  
35 40 45

His Ser Asn Thr Gly Pro Val Lys Glu Ile Cys Arg Arg Ala Ser Gly  
50 55 60

Arg Val Asn Lys Ser Ser Thr Gln Gln Phe Pro Leu Thr Thr Cys Lys  
65 70 75 80

Asn Pro Lys Arg Cys Lys Tyr Ser Gln Ser Asn Glu Thr Asn Tyr Ile  
85 90 95

Cys Ile Thr Cys Arg Asp Asn Tyr Pro Val His Phe Val Lys Ile Gly  
100 105 110

Lys Cys

<210> 18

<211> 342

<212> DNA

<213> Artificial

<220>

<223> 2325p6 DNA occurring naturally in rana pipiens eggs and embryos.

<400> 18

aaaccgaaag aagacaaaga atgggaaaaa ttcaaagtta aacatatcac ttctcagtct 60

gttgctgact tcaactgcac ttctactatg aacaaccggg acttcactcc ggacgggtcag 120

tgcaaaccga tcaacacttt catccattct aacactgggc cggttaaaga aatctgccgt 180

cgtgcttctg gtcgtgttaa caaatcttct actcagcagt tcccgctgac tacttgcaaa 240

aaccgaaac gttgcaata ctctcagtct aacgaaacta actacatctg catcacttgc 300

cgtgacaact acccggttca tttcggtaaa atcggtaa at gc 342

<210> 19

<211> 56

<212> DNA

<213> Artificial

<220>

<223> SEQ ID NO:19

<400> 19

taattttgtt taactttaag aaggagatat accatgaaac cgaaagaaga caaaga 56

<210> 20

<211> 63

<212> DNA

<213> Artificial

<220>

<223> SEQ ID NO:20 Complementary to SEQ ID NO:19

<400> 20

ttcccatctt ttgtcttctt tcggtttcat ggtatatctc cttcttaaag ttaaacaaaa 60

tta 63

<210> 21

<211> 57

<212> DNA

<213> Artificial

<220>

<223> SEQ ID NO:21

<400> 21

atgggaaaaa ttcaaagtta aacatatcac ttctcagtct gttgctgact tcaactg 57

<210> 22

<211> 57

<212> DNA

<213> Artificial

<220>

<223> SEQ ID NO:22 Complementary to SEQ ID NO:21

<400> 22

agaagtgcag ttgaagtcag caacagactg agaagtgata tgtttaactt tgaattt 57

<210> 23

<211> 60

<212> DNA

<213> Artificial

<220>

<223> SEQ ID NO:23

<400> 23

cacttctact atgaacaacc cggacttcac tccggacggt cagtgcaaac cgatcaacac 60

<210> 24

<211> 60

<212> DNA

<213> Artificial

<220>  
 <223> SEQ ID NO:24 Complementary to SEQ ID NO:23  
 <400> 24  
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 <210> 25  
 <211> 52  
 <212> DNA  
 <213> Artificial  
 <220>  
 <223> SEQ ID NO:25  
 <400> 25  
 tttcatccat tctaactctg gtccgggttaa agaaatctgc cgtcgtgctt ct 52  
 <210> 26  
 <211> 52  
 <212> DNA  
 <213> Artificial  
 <220>  
 <223> SEQ ID NO:26 Complementary to SEQ ID NO:25  
 <400> 26  
 cacgaccaga agcacgacgg cagatttctt taaccggacc agtgtagaa tg 52  
 <210> 27  
 <211> 54  
 <212> DNA  
 <213> Artificial  
 <220>  
 <223> SEQ ID NO:27  
 <400> 27  
 ggtcgtgtta acaaactctt tactcagcag ttcccgtga ctacttcaa aaac 54  
 <210> 28  
 <211> 54  
 <212> DNA  
 <213> Artificial  
 <220>  
 <223> SEQ ID NO:28 Complement to SEQ ID NO:27  
 <400> 28  
 gtttcgggtt ttgcaagta gtcagcggga actgctgagt agaagatttg ttaa 54  
 <210> 29  
 <211> 57  
 <212> DNA  
 <213> Artificial  
 <220>  
 <223> SEQ ID NO:29

<400> 29  
ccgaaacggt gcaaatactc tcagtctaac gaaactaact acatctgcat cacttgc 57

<210> 30  
<211> 57  
<212> DNA  
<213> Artificial

<220>  
<223> SEQ ID NO:30 Complement to SEQ ID NO:29

<400> 30  
tgtcacggca agtgatgcag atgtagttag tttcgtaga ctgagagtat ttgcaac 57

<210> 31  
<211> 60  
<212> DNA  
<213> Artificial

<220>  
<223> SEQ ID NO:31 Contains stop codon and BamHI site

<400> 31  
cgtgacaact acccggttca tttcgtagaa atcggtaaat gctagtaggg atccgcgcgg 60

<210> 32  
<211> 53  
<212> DNA  
<213> Artificial

<220>  
<223> SEQ ID NO:32 Complementary to SEQ ID NO:31

<400> 32  
ccgcgcggat ccctactagc atttaccgat tttaacgaaa tgaaccgggt agt 53

<210> 33  
<211> 43  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> SEQ ID NO:33 pET-11d Forward primer contains XbaI site

<400> 33  
caattcccct ctagaaataa ttttgtagaa cttaagaag gag 43

<210> 34  
<211> 114  
<212> PRT  
<213> Artificial

<220>  
<223> Recombinantly produced 2728 protein occurring naturally in rana p  
ipiens eggs and embryos.

<400> 34



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Lys Pro Lys Glu Asp Lys Glu Trp Val Lys Phe Lys Ala Lys His Ile  
1 5 10 15

Thr Ser Gln Ser Val Ala Asp Phe Asn Cys Asn Lys Thr Met Asn Asp  
20 25 30

Pro Asp Phe Thr Pro Asp Gly Gln Cys Lys Pro Val Asn Thr Phe Ile  
35 40 45

His Ser Asn Thr Gly Pro Val Lys Asp Ile Cys Arg Arg Ala Ser Gly  
50 55 60

Arg Val Asn Lys Ser Ser Thr Gln Gln Phe Pro Leu Thr Thr Cys Asn  
65 70 75 80

Lys Pro Ile Arg Cys Lys Tyr Ser Gln Ser Asn Thr Thr Asn Phe Ile  
85 90 95

Cys Ile Thr Cys Arg Asp Asn Tyr Pro Val His Phe Val Lys Ile Gly  
100 105 110

Lys Cys

<210> 35  
<211> 342  
<212> DNA  
<213> Artificial

<220>  
<223> 2728 DNA occurring naturally in rana pipiens eggs and embryos.

<400> 35  
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gttgctgact tcaactgcaa caaaactatg aacgacccgg acttcactcc ggacgggtcag 120  
tgcaaaccgg ttaacacttt catccattct aacactggtc cgggttaaaga catctgccgt 180  
cgtgcttctg gtcgtgttaa caaatcttct actcagcagt tcccgctgac tacttgcaac 240  
aaaccgatcc gttgcaaata ctctcagtct aacactacta acttcactctg catcacttgc 300  
cgtgacaact acccggttca tttcggttaa atcggtaa at gc 342

<210> 36  
<211> 56  
<212> DNA  
<213> Artificial

<220>  
<223> SEQ ID NO:36

<400> 36  
aattttgttt aactttaaga aggagatata catatgaaac cgaaagaaga caaaga 56

<210> 37  
<211> 56  
<212> DNA  
<213> Artificial

<220>  
<223> SEQ ID NO:37 Complement to SEQ ID NO:36

<400> 37  
aaccatttct ttgtcttctt tcggtttcat atgtatatct cttctttaa gttaa 56

<210> 38  
<211> 56  
<212> DNA  
<213> Artificial

<220>  
<223> SEQ ID NO:38

<400> 38  
atgggttaaa ttcaaagcta aacatatcac ttctcagtct gttgctgact tcaact 56

<210> 39  
<211> 56  
<212> DNA  
<213> Artificial

<220>  
<223> SEQ ID NO:39 Complement to SEQ ID NO:38

<400> 39  
ttgttgagct tgaagtcagc aacagactga gaagtatat gtttagcttt gaattt 56

<210> 40  
<211> 59  
<212> DNA  
<213> Artificial

<220>  
<223> SEQ ID NO:40

<400> 40  
gcaacaaaac tatgaacgac ccggaattca ctccggacgg tcagtgcaaa ccggttaac 59

<210> 41  
<211> 59  
<212> DNA  
<213> Artificial

<220>  
<223> SEQ ID NO:41 Complementary to SEQ ID NO:40

<400> 41  
tgaaagtgtt aaccggtttg cactgaccgt ccggagtga gtcgggtcg ttcatagtt 59

<210> 42  
 <211> 54  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> SEQ ID NO:42  
  
 <400> 42  
 actttcatcc attctaacac tgggtccggtt aaagacatct gccgtcgtgc ttct 54  
  
 <210> 43  
 <211> 54  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> SEQ ID NO:43 Complementary to SEQ ID NO:42  
  
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 caccgaccaga agcaccgacgg cagatgtctt taaccggacc agtgttagaa tgga 54  
  
 <210> 44  
 <211> 54  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> SEQ ID NO:44  
  
 <400> 44  
 ggtcgtgtta acaaattcttc tactcagcag ttcccgtga ctacttgcaa caaa 54  
  
 <210> 45  
 <211> 54  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> SEQ ID NO:45 Complementary to SEQ ID NO:44  
  
 <400> 45  
 ggatcggttt gttgcaagta gtcagcggga actgctgagt agaagatttg ttaa 54  
  
 <210> 46  
 <211> 57  
 <212> DNA  
 <213> Artificial  
  
 <220>  
 <223> SEQ ID NO:46  
  
 <400> 46  
 ccgatccgtt gcaaatactc tcagtctaac actactaact tcacttgcac cacttgc 57  
  
 <210> 47  
 <211> 57

<212> DNA  
<213> Artificial

<220>  
<223> SEQ ID NO:47 Complementary to SEQ ID NO:46

<400> 47  
tgtcacggca agtgatgcag atgaagttag tagtgtaga ctgagagtat ttgcaac 57

<210> 48  
<211> 54  
<212> DNA  
<213> Artificial

<220>  
<223> SEQ ID NO:48

<400> 48  
cgtgacaact acccggttca tttcggttaa atcggtaa gctagtaggg atcc 54

<210> 49  
<211> 53  
<212> DNA  
<213> Artificial

<220>  
<223> SEQ ID NO:49 Complementary to SEQ ID NO:48

<400> 49  
ccgcgcggat ccctactagc atttaccgat tttaacgaaa tgaaccgggt agt 53

<210> 50  
<211> 42  
<212> DNA  
<213> Artificial

<220>  
<223> pET-22b Forward primer contains XbaI site

<400> 50  
gcccagccgg cgatggccaa accgaaagaa gaccgtgaat gg 42

<210> 51  
<211> 114  
<212> PRT  
<213> Artificial

<220>  
<223> Recombinantly produced 2325p4a protein occurring naturally in ran  
a pipiens eggs and embryos.

<400> 51

Lys Pro Lys Glu Asp Arg Glu Trp Glu Lys Phe Lys Thr Lys His Ile  
1 5 10 15

Thr Ser Gln Ser Val Ala Asp Phe Asn Cys Asn Arg Thr Met Asn Asp  
20 25 30

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Pro Ala Tyr Thr Pro Asp Gly Gln Cys Lys Pro Val Asn Thr Phe Ile  
35 40 45

His Ser Thr Thr Gly Pro Val Lys Glu Ile Cys Arg Arg Ala Thr Gly  
50 55 60

Arg Val Asn Lys Ser Ser Thr Gln Gln Phe Thr Leu Thr Thr Cys Lys  
65 70 75 80

Asn Pro Ile Arg Cys Lys Tyr Ser Gln Ser Asn Thr Thr Asn Phe Ile  
85 90 95

Cys Ile Thr Cys Arg Asp Asn Tyr Pro Val His Phe Val Lys Thr Gly  
100 105 110

Lys Cys

<210> 52  
<211> 342  
<212> DNA  
<213> Artificial

<220>  
<223> 2325p4a DNA occurring naturally in rana pipiens eggs and embryos.

<400> 52  
aaaccgaaag aagaccgtga atgggaaaaa ttcaaaacta aacatatcac ttctcagtct 60  
gttgctgact tcaactgcaa ccgtactatg aacgacccgg cttacactcc ggacgggtcag 120  
tgcaaaccgg ttaacacttt catccattct actactggtc cggttaaaga aatctgccgt 180  
cgtgctactg gtcgtgttaa caaatcttct actcagcagt tcactctgac tacttgcaaa 240  
aaccgatcc gttgcaaata ctctcagtct aacactacta acttcatctg catcacttgc 300  
cgtgacaact acccggttca tttcggttaa actggttaa gc 342

<210> 53  
<211> 39  
<212> DNA  
<213> Artificial

<220>  
<223> SEQ ID NO:53 for substituting valine for isoleucine at position 4.

<400> 53  
gacggtcagt gcaaaccggt taacactttc atccattct 39

<210> 54  
<211> 39

<212> DNA  
<213> Artificial

<220>  
<223> SEQ ID NO:54 Complementary to SEQ ID NO:53

<400> 54  
agaatggatg aaagtgttaa ccggtttgca ctgaccgtc

39

<210> 55  
<211> 114  
<212> PRT  
<213> Artificial

<220>  
<223> "Cysteinized" protein.

<400> 55

Lys Pro Lys Glu Asp Arg Glu Trp Glu Lys Phe Lys Thr Lys His Ile  
1 5 10 15

Thr Ser Gln Ser Val Ala Asp Phe Asn Cys Asn Arg Thr Met Asn Asp  
20 25 30

Pro Ala Tyr Thr Pro Asp Gly Gln Cys Lys Pro Ile Asn Thr Phe Ile  
35 40 45

His Ser Thr Thr Gly Pro Val Lys Glu Ile Cys Arg Arg Ala Thr Gly  
50 55 60

Arg Val Asn Lys Ser Ser Cys Gln Gln Phe Thr Leu Thr Thr Cys Lys  
65 70 75 80

Asn Pro Ile Arg Cys Lys Tyr Ser Gln Ser Asn Thr Thr Asn Phe Ile  
85 90 95

Cys Ile Thr Cys Arg Asp Asn Tyr Pro Val His Phe Val Lys Thr Gly  
100 105 110

Lys Cys

<210> 56  
<211> 342  
<212> DNA  
<213> Artificial

<220>  
<223> DNA of "cysteinized" protein

<400> 56  
aaaccgaaag aagaccgtga atgggaaaaa ttcaaaacta aacatatcac ttctcagtct

60

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gttgctgact tcaactgcaa ccgtactatg aacgacccgg cttacactcc ggacggtcag 120
tgcaaaccga tcaacacttt catccattct actactggtc cggtaaaga aatctgccgt 180
cgtgctactg gtcgtgttaa caaatcttct tgccagcagt tctcttgac tacttgcaaa 240
aaccgatcc gttgcaaata ctctcagtct aacactacta acttcatctg catcacttgc 300
cgtgacaact acccggttca tttcgtaaa actggtaa at gc 342
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<210> 57  
<211> 39  
<212> DNA  
<213> Artificial

<220>  
<223> SEQ ID NO:57 Forward primer for substituting cysteine for threonine at position 71.

<400> 57  
gttaacaaat cttcttgcca gcagttcact ctgactact 39

<210> 58  
<211> 39  
<212> DNA  
<213> Artificial

<220>  
<223> SEQ ID NO:58 Reverse primer Complementary to SEQ ID NO:57

<400> 58  
cagagtgaac tgctggcaag aagatttggt aacacgacc 39

<210> 59  
<211> 115  
<212> PRT  
<213> Artificial

<220>  
<223> Recombinantly produced 2325p4 protein with methionine in -1 position.

<400> 59

Met Lys Pro Lys Glu Asp Arg Glu Trp Glu Lys Phe Lys Thr Lys His  
1 5 10 15

Ile Thr Ser Gln Ser Val Ala Asp Phe Asn Cys Asn Arg Thr Met Asn  
20 25 30

Asp Pro Ala Tyr Thr Pro Asp Gly Gln Cys Lys Pro Ile Asn Thr Phe  
35 40 45

Ile His Ser Thr Thr Gly Pro Val Lys Glu Ile Cys Arg Arg Ala Thr  
50 55 60

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Gly Arg Val Asn Lys Ser Ser Thr Gln Gln Phe Thr Leu Thr Thr Cys  
65 70 75 80

Lys Asn Pro Ile Arg Cys Lys Tyr Ser Gln Ser Asn Thr Thr Asn Phe  
85 90 95

Ile Cys Ile Thr Cys Arg Asp Asn Tyr Pro Val His Phe Val Lys Thr  
100 105 110

Gly Lys Cys  
115

<210> 60  
<211> 115  
<212> PRT  
<213> Artificial

<220>  
<223> Recombinantly produced 2325p6 protein with methionine in -1 position.

<400> 60

Met Lys Pro Lys Glu Asp Lys Glu Trp Glu Lys Phe Lys Val Lys His  
1 5 10 15

Ile Thr Ser Gln Ser Val Ala Asp Phe Asn Cys Thr Ser Thr Met Asn  
20 25 30

Asn Pro Asp Phe Thr Pro Asp Gly Gln Cys Lys Pro Ile Asn Thr Phe  
35 40 45

Ile His Ser Asn Thr Gly Pro Val Lys Glu Ile Cys Arg Arg Ala Ser  
50 55 60

Gly Arg Val Asn Lys Ser Ser Thr Gln Gln Phe Pro Leu Thr Thr Cys  
65 70 75 80

Lys Asn Pro Lys Arg Cys Lys Tyr Ser Gln Ser Asn Glu Thr Asn Tyr  
85 90 95

Ile Cys Ile Thr Cys Arg Asp Asn Tyr Pro Val His Phe Val Lys Ile  
100 105 110

Gly Lys Cys  
115

<210> 61  
<211> 115  
<212> PRT  
<213> Artificial



<220>

<223> Recombinantly produced 2728 protein with methionine in -1 position.

<400> 61

Met Lys Pro Lys Glu Asp Lys Glu Trp Val Lys Phe Lys Ala Lys His  
1 5 10 15

Ile Thr Ser Gln Ser Val Ala Asp Phe Asn Cys Asn Lys Thr Met Asn  
20 25 30

Asp Pro Asp Phe Thr Pro Asp Gly Gln Cys Lys Pro Val Asn Thr Phe  
35 40 45

Ile His Ser Asn Thr Gly Pro Val Lys Asp Ile Cys Arg Arg Ala Ser  
50 55 60

Gly Arg Val Asn Lys Ser Ser Thr Gln Gln Phe Pro Leu Thr Thr Cys  
65 70 75 80

Asn Lys Pro Ile Arg Cys Lys Tyr Ser Gln Ser Asn Thr Thr Asn Phe  
85 90 95

Ile Cys Ile Thr Cys Arg Asp Asn Tyr Pro Val His Phe Val Lys Ile  
100 105 110

Gly Lys Cys  
115

<210> 62

<211> 2

<212> PRT

<213> Artificial

<220>

<223> 2 residues of a pelB leader sequence

<400> 62

Met Ala  
1

<210> 63

<211> 116

<212> PRT

<213> Artificial

<220>

<223> Recombinantly produced 2325p4 protein with pelB leader sequence that is 2 amino acid residues long.

<400> 63

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Met Ala Lys Pro Lys Glu Asp Arg Glu Trp Glu Lys Phe Lys Thr Lys  
1 5 10 15

His Ile Thr Ser Gln Ser Val Ala Asp Phe Asn Cys Asn Arg Thr Met  
20 25 30

Asn Asp Pro Ala Tyr Thr Pro Asp Gly Gln Cys Lys Pro Ile Asn Thr  
35 40 45

Phe Ile His Ser Thr Thr Gly Pro Val Lys Glu Ile Cys Arg Arg Ala  
50 55 60

Thr Gly Arg Val Asn Lys Ser Ser Thr Gln Gln Phe Thr Leu Thr Thr  
65 70 75 80

Cys Lys Asn Pro Ile Arg Cys Lys Tyr Ser Gln Ser Asn Thr Thr Asn  
85 90 95

Phe Ile Cys Ile Thr Cys Arg Asp Asn Tyr Pro Val His Phe Val Lys  
100 105 110

Thr Gly Lys Cys  
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<211> 7  
<212> PRT  
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<220>  
<223> 7 residues of a pelB leader sequence

<400> 64

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<220>  
<223> 2325p4 protein with pelB leader sequence that is 7 amino acid residues long.

<400> 65

Ala Ala Gln Pro Ala Met Ala Lys Pro Lys Glu Asp Arg Glu Trp Glu  
1 5 10 15

Lys Phe Lys Thr Lys His Ile Thr Ser Gln Ser Val Ala Asp Phe Asn  
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20 5016 US Saxena 17 Jul 2003  
25 30

Cys Asn Arg Thr Met Asn Asp Pro Ala Tyr Thr Pro Asp Gly Gln Cys  
35 40 45

Lys Pro Ile Asn Thr Phe Ile His Ser Thr Thr Gly Pro Val Lys Glu  
50 55 60

Ile Cys Arg Arg Ala Thr Gly Arg Val Asn Lys Ser Ser Thr Gln Gln  
65 70 75 80

Phe Thr Leu Thr Thr Cys Lys Asn Pro Ile Arg Cys Lys Tyr Ser Gln  
85 90 95

Ser Asn Thr Thr Asn Phe Ile Cys Ile Thr Cys Arg Asp Asn Tyr Pro  
100 105 110

Val His Phe Val Lys Thr Gly Lys Cys  
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<223> 22 residues of a pelB leader sequence  
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Ala Gln Pro Ala Met Ala  
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<211> 136  
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<223> Recombinantly produced 2325p4 protein with pelB leader sequence that is 22 amino acid residues long.  
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Met Lys Tyr Leu Leu Pro Thr Ala Ala Ala Gly Leu Leu Leu Leu Ala  
1 5 10 15

Ala Gln Pro Ala Met Ala Lys Pro Lys Glu Asp Arg Glu Trp Glu Lys  
20 25 30

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Phe Lys Thr Lys His Ile Thr Ser Gln Ser Val Ala Asp Phe Asn Cys  
35 40 45

Asn Arg Thr Met Asn Asp Pro Ala Tyr Thr Pro Asp Gly Gln Cys Lys  
50 55 60

Pro Ile Asn Thr Phe Ile His Ser Thr Thr Gly Pro Val Lys Glu Ile  
65 70 75 80

Cys Arg Arg Ala Thr Gly Arg Val Asn Lys Ser Ser Thr Gln Gln Phe  
85 90 95

Thr Leu Thr Thr Cys Lys Asn Pro Ile Arg Cys Lys Tyr Ser Gln Ser  
100 105 110

Asn Thr Thr Asn Phe Ile Cys Ile Thr Cys Arg Asp Asn Tyr Pro Val  
115 120 125

His Phe Val Lys Thr Gly Lys Cys  
130 135

<210> 68

<211> 115

<212> PRT

<213> Artificial

<220>

<223> Recombinantly produced 2325p4a protein with methionine in -1 position.

<400> 68

Met Lys Pro Lys Glu Asp Arg Glu Trp Glu Lys Phe Lys Thr Lys His  
1 5 10 15

Ile Thr Ser Gln Ser Val Ala Asp Phe Asn Cys Asn Arg Thr Met Asn  
20 25 30

Asp Pro Ala Tyr Thr Pro Asp Gly Gln Cys Lys Pro Val Asn Thr Phe  
35 40 45

Ile His Ser Thr Thr Gly Pro Val Lys Glu Ile Cys Arg Arg Ala Thr  
50 55 60

Gly Arg Val Asn Lys Ser Ser Thr Gln Gln Phe Thr Leu Thr Thr Cys  
65 70 75 80

Lys Asn Pro Ile Arg Cys Lys Tyr Ser Gln Ser Asn Thr Thr Asn Phe  
85 90 95

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Ile Cys Ile Thr Cys Arg Asp Asn Tyr Pro Val His Phe Val Lys Thr  
100 105 110

Gly Lys Cys  
115

<210> 69  
<211> 115  
<212> PRT  
<213> Artificial

<220>  
<223> "Cysteinized" 2325p4-Cys71 protein with methionine in -1 position

<400> 69

Met Lys Pro Lys Glu Asp Arg Glu Trp Glu Lys Phe Lys Thr Lys His  
1 5 10 15

Ile Thr Ser Gln Ser Val Ala Asp Phe Asn Cys Asn Arg Thr Met Asn  
20 25 30

Asp Pro Ala Tyr Thr Pro Asp Gly Gln Cys Lys Pro Ile Asn Thr Phe  
35 40 45

Ile His Ser Thr Thr Gly Pro Val Lys Glu Ile Cys Arg Arg Ala Thr  
50 55 60

Gly Arg Val Asn Lys Ser Ser Cys Gln Gln Phe Thr Leu Thr Thr Cys  
65 70 75 80

Lys Asn Pro Ile Arg Cys Lys Tyr Ser Gln Ser Asn Thr Thr Asn Phe  
85 90 95

Ile Cys Ile Thr Cys Arg Asp Asn Tyr Pro Val His Phe Val Lys Thr  
100 105 110

Gly Lys Cys  
115

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<213> Artificial

<220>  
<223> "Cysteinized" fusion protein.

<400> 70

Asn Ser Asp Ser Glu Cys Pro Leu Ser His Asp Gly Tyr Cys Leu His  
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**1**                      **5**                      **10**                      **15**

Asp	Gly	Val	Cys 20	Met	Tyr	Ile	Glu	Ala 25	Leu	Asp	Lys	Tyr	Ala 30	Cys	Asn
Cys	Val	Val 35	Gly	Tyr	Ile	Gly	Glu 40	Arg	Cys	Gln	Tyr	Arg 45	Asp	Leu	Lys
Trp	Trp 50	Glu	Leu	Arg	Gly	Gly 55	Ser	Gly	Gly	Pro	Gly 60	Gly	Ser	Lys	Pro
Lys 65	Glu	Asp	Arg	Glu	Trp 70	Glu	Lys	Phe	Lys	Thr 75	Lys	His	Ile	Thr	Ser 80
Gln	Ser	Val	Ala	Asp 85	Phe	Asn	Cys	Asn	Arg 90	Thr	Met	Asn	Asp	Pro 95	Ala
Tyr	Thr	Pro	Asp 100	Gly	Gln	Cys	Lys	Pro 105	Ile	Asn	Thr	Phe	Ile 110	His	Ser
Thr	Thr	Gly 115	Pro	Val	Lys	Glu	Ile 120	Cys	Arg	Arg	Ala	Thr 125	Gly	Arg	Val
Asn	Lys 130	Ser	Ser	Cys	Gln	Gln 135	Phe	Thr	Leu	Thr	Thr 140	Cys	Lys	Asn	Pro
Ile 145	Arg	Cys	Lys	Tyr	Ser 150	Gln	Ser	Asn	Thr	Thr 155	Asn	Phe	Ile	Cys	Ile 160
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ggttctaaac	cgaaagaaga	ccgtgaatgg	gaaaaattca	aaactaaaca	tatcatttct		240
cagtctgttg	ctgacttcaa	ctgcaaccgt	actatgaacg	acccggctta	cactccggac		300
ggtcagtgca	aaccgatcaa	cactttcatc	cattctacta	ctggtccggg	taaagaaatc		360

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tgccgctcgtg ctactggtcg tgtaacaaa tcttcttgcc agcagttcac tctgactact	420
tgcaaaaacc cgatccgttg caaatactct cagtctaaca ctactaactt catctgcatc	480
acttgccgtg acaactaccc gggttcatttc gttaaaactg gtaaattgc	528

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